

## **HEIDS – Wednesday 4 June 2003**

### **Status report from Resilience Working Group of HEIDS**

**Linda M.L. McCormick**

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#### **Update**

The following sections represent the work of the group established by HEIDS.

Since it was drafted (as an update to inform the SMCG meeting on 14 May) there have been two key developments.

The contract has been signed for UKERNA to provide inter-connectivity for the 32 Local Education Authorities in Scotland using the JANET backbone. An element of funding will flow from this to enhance the JANET links to AbMAN, FaTMAN and UHI as the local authorities will be connected via the BAR on the nearest MAN. The enhancement is likely to provide some disaster recovery/resilience option.

As there was no evidence of SHEFC being in a position to make funding available for resilience, the Principals of Edinburgh and Glasgow wrote to the Chief Executive to ask whether it would be possible to use part of each university's SFIF-2 allocation to provide a resilient link between each institution. On receipt of a positive response, both universities have submitted bids. Unfortunately timescales prevented consultation within the MANs. However, neither university would wish to install network infrastructure that would necessarily preclude offering resilience to other institutions on the MAN given appropriate financial safeguards.

It is my own personal belief that resilience is moving up the agenda to such an extent that it is inevitable that SuperJANET 5 will not include some element of resilience on a UK wide basis obviously subject to funding. If this is the case, then Edinburgh & Glasgow would anticipate that the resilient link between them would be taken over and managed by UKERNA for ClydeNET and EaStMAN.

#### **Summary**

The group took as its starting point the paper produced by UKERNA in November 1998 on "Report of Initial Risk Assessment carried out on the Resilience of Scottish MANs and their Interconnectivity to JANET".

In addition to an e-mail list, the group has met on three occasions by video-conference. For part of the first two meetings representatives of one possible supplier attended. The third meeting was a more detailed option appraisal meeting with UKERNA (who are full members of the working party) informed by the thinking of UKERNA's JANET Architecture Group, the potential impact of the SPARK project and the indicative costs received.

In line with the Turnbull guidelines, the work of the group has been predicated on identifying a cost effective solution for a disaster recovery scenario with some element of resilience rather than trying to seek a solution which provides full resilience which would be prohibitively expensive.

It is very probable that synergy between SPARK and the Scottish MANs can result in some SPARK funding being available to assist with implementation. As both the Scottish Executive and SFC are happy for SPARK to use the existing JANET backbone in Scotland, it is reasonable to anticipate use of SPARK funds for enhancing the backbone.

## **Risks**

The identified risks that the group has focussed on are:

1. Equipment malfunction at MAN access point (MAN router and BAR)
2. Failure of wide-area telecommunications links or provider's equipment (SDH end-point equipment)
3. Loss of building or other major facility

It was noted that UHIMI already enjoyed resilience in MAN entry point and C-POP. AbMAN and FaTMAN both have protected circuits linking them to the C-POP. No figures were available to determine if the protection has ever been used. ClydeNET and EaStMAN have non-protected links to the C-POP. It should be noted that SPARK considerations would result in the UHIMI resilient link being insufficient.

The group believes that for these risks, no institution should be without service for more than two days. The loss of the JANET link also has major repercussions for the DNS service on which local services depend. There is a very tight two day window to build infrastructure, hardware and systems and restore data so that the network is functioning again.

## **Possible Solutions**

All these risks can be mitigated by restoring and developing a dual connection for each MAN with the second access link going to the opposite C-POP. Indeed, after some deliberation, this is the only solution identified that meets our needs. The previous Scottish Interconnect provided this solution with bandwidth commensurate with each MAN's primary link. Technology has moved on since then and a wider range of possibilities is now available from potential suppliers.

The recommendation of the group is to procure links with Gigabit presentation limited to a rate of say 200Mbps in the south and 100Mbps in the north. Note that these figures only take account of existing traffic usage figures and growth rates from the MANs with no consideration of SPARK. It is important to emphasise that in a disaster scenario it is possible to raise the bandwidth of the secondary link to cater for the current traffic requirements with a few days notice.

## **Topology and Management**

UKERNA presented three options with a variant on the third. Each relies on pairing two MANs viz. ClydeNET with EaStMAN and AbMAN with FaTMAN. (See separate pdf file for the topology. The AbMAN-FaTMAN is a mirror). The first option was immediately eliminated in terms of cost. The second option for which indicative costs (from no particular supplier) are given in Appendix A<sup>1</sup> is the preferred option since it provides the required resilience, adheres to the UKERNA connection model and

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<sup>1</sup> Appendix not provided for HEIDS web site version. Full document with appendix is available from Linda McCormick.

preserves the UKERNA management domain. Note that the MAN is responsible for making provision for a fibre point to point link between the new and existing BARs. The third option is a direct inter-MAN link which is managed by the MANs concerned either directly or under contract to UKERNA. This diverges significantly from the UKERNA connection and management model.

Although the resilience group is a working group of HEIDS, SMCG is asked to consider our recommendation from the MAN perspective. It would be helpful also to have some deliberation on the contract length. The two main options are to align the contract with the SJ4 contract termination or the contract termination of the MANs with suitable breakpoints for price review.

### **Other Considerations**

It was noted that failure of a JANET C-POP is a risk which will feature in UKERNA's contingency planning.

Since it was outwith our remit, no account has been taken in our deliberations of the construction of resilient MANs nor of resilient access from HEIs/FECs to these MANs.

Since discussions on SJ5 are commencing, our work is providing useful input.